EPA Region 7 TMDL Review

TMDL ID:	IA-02-WFC-0090-L	**Waterbody ID:**	IA 02-WFC-0090-L
Waterbody Name:	BEEDS LAKE, FRANKLIN CO.		
Tributary:	Spring Creek, unnamed tribuatary		
Pollutant:	PATHOGENS		
State:	IA	**HUC:**	07080204
BASIN:	Cedar River Basin		
Submittal Date:	2/23/2006		
Approved:	Yes		

Submittal Letter

State submittal letter indicates final TMDL(s) for specific pollutant(s)/water(s) were adopted by the state, and submitted to EPA for approval under section 303(d) of the Clean Water Act.

The TMDL for Beeds Lake and three comment letters were formally submitted by the Iowa Department of Natural Resources (IDNR) in a letter received by EPA on February 23, 2006.

Water Quality Standards Attainment

The water body's loading capacity for the applicable pollutant is identified and the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources is described. TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards.

Iowa water quality standards for bacteria states that E. coli bacteria levels shall not exceed a geometric mean of 126 organisms per 100 ml of water or a single sample maximum of 235 organisms per 100 ml of water. These criteria apply during the recreational period of March 15 through November 15 of each year. WQS should be achieved based on a 211 CFU/100ml single sample maximum (less the MOS of 24 CFU/100ml), which will be an 80% reduction. This single sample maximum is targeted because water quality violations occur at periods of high flow (short duration).

Numeric Target(s)

Submittal describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, site specific if possible, was developed from a narrative criterion and a description of the process used to derive the target is included in the submittal.

The pollutant causing the water quality impairment is pathogens associated with excessive loading of fecal material. Designated uses for Beeds Lake are Primary Contact Recreation (Class A1) and Aquatic Life (Class B(WW)). Excess pathogen loading has impaired the primary contact recreation use for E. coli as described in the Iowa Administrative Code and hindered the designated uses.

Primary contact recreational use (Class A1)- waters in which recreational or other uses may result in prolonged and direct contact with the water, involving considerable risk of ingesting water in quantities sufficient to pose a health hazard. Such activities would include, but not be limited to, swimming, diving, watersking, and water contact recreational canoeing.

The target of this TMDL is an E. coli level which does not exceed a geometric mean of 126 organisms per 100 ml of water or a single sample maximum of 235 organisms per 100 ml of water. This criterion applies during the recreational season form March 15 to November 15 of each year.

Numeric Target(s) and Pollutant(s) of concern

An explanation and analytical basis for expressing the TMDL through surrogate measures (e.g., parameters such as percent fines and turbidity for sediment impairments, or chlorophyll-a and phosphorus loadings for excess algae) is provided, if applicable. For each identified pollutant, the submittal describes analytical basis for conclusions, allocations and margin of safety that do not exceed the load capacity.

Due to the nature of point source versus nonpoint source contributions to E. coli loading, load duration curves are used to link E. coli loads to sources. Nonpoint contributions to the E. coli load are strongly correlated with high flow conditions and runoff from rainfall events. Point source contributions will dominate the loading when streamflow is low. The TMDL is based on the numeric water quality criteria for E. coli bacteria.

Source Analysis

Important assumptions made in developing the TMDL, such as assumed distribution of land use in the watershed, population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources, are described. Point, non point and background sources of pollutants of concern are described, including magnitude and location of the sources. Submittal demonstrates all significant sources have been considered.

There is one permitted point source in the Beeds Lake watershed; the Latimer-Coulter wastewater treatment facility, which is located on Spring Creek 10 miles upstream of the lake. An unpermitted point source was recently discovered in the watershed. The CAL Community Schools wastewater is treated by a settling tank and three sand filters, before discharge into a tile leading to Spring Creek.

Non point sources are; pastures with unrestricted access to Spring Creek, several farmsteads close to Spring Creek with a potential for septic failure, urban including pet wastes, land applied manure from CAFOs, and wildlife particularly deer and waterfowl. It appears all sources have been identified.

Allocation

Submittal identifies appropriate wasteload allocations for point, and load allocations for nonpoint sources. If no point sources are present the wasteload allocation is zero. If no nonpoint sources are present, the load allocation is zero.

The TMDL recognizes allocations are dynamic and can vary with stream flow. The method used to account for the variation in flow is based upon water quality duration curves. The actual load is calculated based on flow and concentration. The load target is based on the daily maximum less the MOS (24 CFU/100ml) of 211 CFU/100ml at the flow for that day. Data from 2000-2004 indicate the single sample concentration was 7,700 CFU/100ml. To achieve and maintain water quality standards and protect the designated uses, a total source load reduction of 80% is required. Waste Load Allocations (WLAs) are set at the existing levels. The total pathogen load allocation (LA) for the nonpoint sources is 211 CFU/100ml.

WLA Comment

This WLA is based on the fact that streams are particularly susceptible to the influence of point source discharges during low flow conditions. The low flow condition for this TMDL is defined as ten times the design flow of 0.0789 mgd or as the 7Q10 flow, whichever is greater. This equates to stream flows less than 1.2 cfs (ten times the facility design flow).

WLAs are set at the existing levels. There are two point sources identified for this TMDL: City of Latimer-Coulter wastewater treatment facility and the CAL Community Schools. The CAL Community Schools" discharge is an unpermitted discharge to Spring Creek. The school is in the process of connecting to the Latimer-Coulter sanitary sewer system. The school will then receive a WLA of zero.

Use of the U.S. EPA's bacterial indicator tool shows the Latimer-Coulter wastewater treatment facility is not a significant contributor of the bacteria found in Beeds Lake. The bacterial indicator tool shows that 93% of the bacteria source is from nonpoint sources within the watershed. The bacteria indicator tool estimates that the CAL Community School contributes to 4% of E. coli in Beeds Lake.

LA Comment

This LA assigns responsibility to nonpoint sources for maintaining water quality below the loading curve during flow conditions occurring in the 0-94% flow duration. This equates to stream flows greater than 1.2 cfs. The total pathogen LA for the nonpoint sources is 211 CFU/100ml.

Margin of Safety

Submittal describes explicit and/or implicit margin of safety for each pollutant. If the MOS is implicit, the conservative assumptions in the analysis for the MOS are described. If the MOS is explicit, the loadings set aside for the MOS are identified and a rationale for selecting the value for the MOS is provided.

The Margin of Safety (MOS) for this TMDL is explicit. A numerical MOS of 24 CFU/100ml (10% of the allowable E. coli concentration) has been included to ensure that the required load reduction will result in attainment of water quality targets.

Seasonal Variation and Critical Conditions

Submittal describes the method for accounting for seasonal variation and critical conditions in the TMDL(s).

This TMDL was developed based on the pathogen loading that will result in attainment of water quality targets for the recreational season (March 15 through November 15).

Public Participation

Submittal describes public notice and public comment opportunity, and explains how the public comments were considered in the final TMDL(s).

A public meeting was held at the Beeds Lake Lodge on June 30, 2004 regarding the TMDL process and the development of the pathogen TMDL. The meeting was attended by members of the Beeds Lake Home owners association, the Friends of Beeds Lake, and the Beeds Lake concessionaire.

A second Public meeting was held October 14, 2004, presenting the draft TMDL. This meeting was attended by the county sanitarian, NRCS representative, a park ranger, a County supervisor, a political candidate, and several homeowners near the lake.

DNR staff met with local stakeholders at the First National bank of Hampton on January 19, 2006 to discuss the high levels of indicator bacteria. The public voiced concerns, to maintain the current uses of the lake. Interest in controlling the geese at the beach or moving the beach.

Beeds lake TMDL was public noticed on the IDNR web page on January 5, 2006 through February 3, 2006. Three comment letters were received. Comments received were reviewed, given consideration, and where appropriate, incorporated into the TMDL.

Monitoring Plan for TMDL(s) Under Phased Approach

The TMDL identifies the monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of WQS, and a schedule for considering revisions to the TMDL(s) (where phased approach is used).

Continued monitoring will be conducted by the DNR under the Beach Monitoring program. This monitoring will continue each year from approximately the last week of May until October 31. Several Microbial Source Tracking (MST) methods are available and are being evaluated by DNR staff to determine the method(s) most feasible for Iowa Lakes and streams. As part of phase 2, the DNR hope to add MST to the monitoring plan.

Reasonable assurance

Reasonable assurance only applies when reductions in nonpoint source loading is required to meet the prescribed waste load allocations.

Reasonable assurances are not required for this TMDL. To improve water quality, both WLA and LA were determined for bacteria. The WLA(s) are set at existing levels. LA reductions are required. A watershed project was funded through the CWA Section 319 grant funds from 1994-1998. This project indicates that members of the watershed are committed to improving the water quality in Beeds Lake.